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ABSTRACT

"Excessive" noise outburst behavior of 24 second graders was effectively controlled under automated stimulus conditions. A voice operated relay transmitted signals to an automated combination light display and outburst time/total running time meters; under 2 conditions, the light display functioned first as a primary, then as a secondary reinforcer for "quiet" behavior. The mean outburst ratio dropped from 94.96 percent (Baseline) to 44.19 percent (Condition I) to 34.00 percent (Condition II). Such automated procedures can free the teacher to teach and can lower the chances that she may become an aversive stimulus. (Author/DLG)

THE MAGIC EAR: ANOTHER APPROACH TO AUTOMATED CLASSROOM CONTROL

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In an ABB research design, "excessive" noise outburst behavior of 24 second graders was effectively controlled under automated stimulus conditions. A voice operated relay transmitted signals to an automated combination light display and outburst time/total running time meters; under 2 conditions, the light display functioned first as a primary, then as a secondary reinforcer for "quiet" behavior. The mean outburst ratio dropped from 94.96% (Baseline) to 44.19% (Condition I) to 34.00% (Condition II). Such automated procedures can free the teacher to teach and can lower the chances that she may become an aversive stimulus.

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Objectives: A study presented in 1971 (AERA, "The Game Machine: An Approach to Automated Classroom Control") showed it possible to remove the teacher as contingency manager of reduced out-of-seat behaviors. Live observers counted the behaviors and operated relay equipment to automatically record in-seat behaviors/lapsed time ratios, and to signal "points earned" to Ss. In this study: (1) observation, recording and signalling were accomplished without input from observers; (2) the dependent variable was "classroom outbursts" above a pre-set volume level. The objective was to determine whether this behavior could be controlled by an entirely automated "observer."

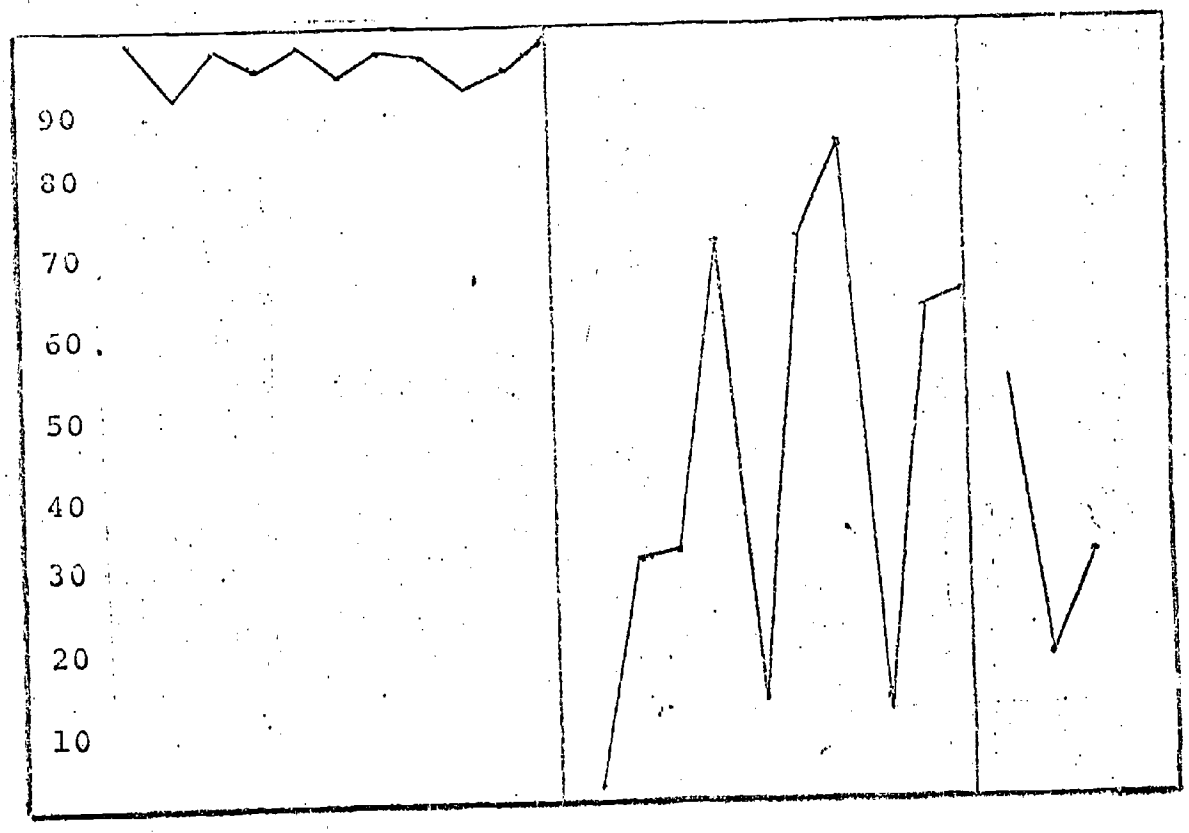
Methods: Ss were 24 second graders, 12 girls and 12 boys, in a rural elementary school. The equipment was installed in their absence, and the teacher denied knowing what it was when they entered the following morning. Ss guessed variously that it was a TV set, a camera and a robot. Ss were habituated to the equipment's presence over 23 days. According to school procedures, Ss were to put their heads down to rest at their desks for a half hour each day after lunch while the teacher left for a planning period. Teacher reports, corroborated by the principal author, indicated that the noise level at this time disturbed other classes. The teacher calibrated a voice operated relay, attached to the ceiling, to 4.5 "units" (decibel correlation not yet correlated), the number of units above which the noise level became, in the teacher's judgment over several calibration trials, "excessive" and "disturbing." At 11:25 a.m. on the 24th day, before Ss had returned from lunch, the teacher activated the equipment for baseline conditions (i.e., above-threshold noise was picked up by the VOR, sent to the receiver and transduced into a switch closure operating a running time meter; a second running time meter yielded a measure of total operating time). No audible or visible stimuli were activated.

When Ss entered, the teacher said nothing, admonished them to "be good" and left the room as usual. After 11 days of baseline, the first experimental condition began. Here the teacher switched in a student feedback circuit which illuminated 5 jewelled lights, arranged vertically on the unit's face, both sequentially and automatically after each successive 30-second interval of "quiet." Also, if quiet continued for 180 seconds, the first of 8 possible gold coins appeared on a small screen in the unit and above the lights. The coins could not be lost, but an outburst between the first and the fifth lights resulted in loss of all lights earned to that point. When Ss entered, the teacher explained only that the Magic Ear would "light up" if they were "very quiet," but would "go off" if they "were noisy."

Data source: The dependent variable, derived from the running time meters, was the percentage of the total time Ss were above the 4.5 "units" of noise level.

Results: Over 11 baseline days the percentage of outburst time was 94.96% (mean). The same percentage, under treatment conditions, averaged 44.19%. The highest single day percentage under treatment (84.69) did not reach the lowest point under baseline (90.22). As the study was run late in the school year, lack of time prevented the authors from fully examining results of a third condition: assigning point values to the coins, and allowing the points to be exchanged for food and toys in a classroom "store." This condition was run for only 3 days over which the criterion percentage averaged 34.00%.

Table 1. Outburst percentages over 24 days



Educational importance: It has been amply demonstrated that a typical teacher's behavior control procedures entail at least 3 disadvantages: (1) she can herself become an aversive stimulus; (2) the procedures consume valuable teaching time, and (3) they are often ineffective, at least over the long run. While the controls used in this study are desirable only when considerable "quiet" is appropriate, further utility can be built in by placing in the teacher's hand a small, electronically operated sending device with which she could de-activate the equipment while she is actually teaching. This study suggests that such broad and long range control is a distinct and economically feasible possibility.

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